UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,584	04/12/2004	Steven J. Gonring	M09733	2649

7590 06/23/2006

William D. Lanyi
Mercury Marine
W6250 Pioneer Road
P.O. Box 1939
Fond du Lac, WI 54936-1939

EXAMINER	
MURALIDAR, RICHARD V	

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/822,584	GONRING, STEVEN J.	
	Examiner	Art Unit	
	Richard V. Muralidar	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/12/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Gross et al. [U.S. 2004/0130296].

With respect to Claim I, Gross discloses a method for monitoring a condition of a battery [par. 0001, Fig. 1, battery 2] which is connectable to an electrical load [Fig. 1, starter 18], comprising the steps of: measuring a voltage characteristic [Fig. 3, this is the battery voltage measured along the curve before minimum voltage G occurs, right before engine cranking begins] of said battery during a measuring event [par. 0027, the measured event is the measurement of the voltage curve shown in Fig. 3, before the engine is cranked; i.e. prior to time period 190] subsequent to a connection event [par. 0028, this is the starter engaging and cranking the engine] when a connection relationship between said battery and said electrical load is changed [prior to being cranked by the starter, the engine and battery voltage were at rest]; comparing said voltage characteristic to a preselected threshold value [Fig. 3, minimum voltage threshold G is the lowest the battery voltage will drop to during engine cranking; par.

0028]; and evaluating said condition of said battery as a function of the relative magnitudes of said voltage characteristic and said threshold value [par. 0028, the comparison occurs between the measured voltage before the point G, and the recovery of the voltage after the point G. If the measured voltage recovers above minimum threshold G then the battery is deemed good].

With respect to Claim 2, Gross discloses said voltage characteristic is a minimum voltage magnitude [Fig. 3, minimum voltage threshold G is the lowest the battery voltage will drop to during engine cranking; par. 0028] which is subsequent to said connection event [par. 0028, this is the starter engaging and cranking the engine].

With respect to Claim 3, Gross discloses said voltage characteristic is a voltage magnitude measured at a predetermined time [par. 0024, the measurements occur during a predetermined window Z] which is subsequent to said connection event.

With respect to Claim 4, Gross discloses said voltage characteristic is a voltage magnitude measured subsequent to a minimum voltage magnitude [Fig. 3, minimum voltage threshold G is the lowest the battery voltage will drop to during engine cranking; par. 0028] which is subsequent to said connection event [par. 0028, this is the starter engaging and cranking the engine].

With respect to Claim 5, Gross discloses said electrical load is a starter motor [Fig. 1, starter 18].

With respect to Claims 6 and 22, Gross discloses said starter motor is connected in torque transferring relation with an internal combustion engine [Fig. 1, starter 18 is connected to the internal combustion engine of vehicle 6].

With respect to Claims 7 and 23, Gross discloses initiating said connection event [the event is initiated when the user turns the ignition key to crank the engine over. The measurement of voltages during time window Z then commences- par. 0024, par. 0025]

With respect to Claims 8 and 24, Gross discloses determining the occurrence of said connection event [Fig. 1, monitor 10 determines the measuring event- par. 0022].

With respect to Claims 9 and 25, Gross discloses said determining step comprises the step of measuring a plurality of occurrences of said voltage characteristic [Fig. 3, multiple cycles of cranking are measured and stored- par. 0029]

With respect to Claim 10, Gross discloses said determining step comprises the step of reacting to a rotation of a rotatable shaft [Fig. 1, monitor 10 senses the minimum voltage threshold G as shown in Fig. 3, which represents the point at which the engine crankshaft begins to turn].

With respect to Claim 11, Gross discloses said rotatable shaft is a crankshaft of an internal combustion engine [Fig. 1, starter 18 connected to vehicle 6's internal combustion engine].

With respect to Claim 13, Gross discloses said voltage characteristic of said battery is measured across two electrodes of said battery [Fig. 1, monitor 10 is arranged between the battery 2 and the starter 18, and therefore measures the voltage across *both* battery and starter terminals, Par. 0022].

With respect to Claim 14, Gross discloses said voltage characteristic of said battery is measured across two electrical connections of said electrical load [Fig. 1,

monitor 10 is arranged between the battery 2 and the starter 18, and therefore measures the voltage across *both* battery and starter terminals, Par. 0022].

With respect to Claim 15, Gross discloses said connection relationship is changed during said connection event from said electrical load being disconnected from said battery to said electrical load being connected to said battery [Fig. 3, the voltage is measured before and after the cranking event].

With respect to Claim 16, Gross discloses storing said voltage characteristic for a plurality of subsequent magnitudes of said voltage characteristic obtained during subsequent measuring events [Fig. 3, multiple cranking cycles are shown, multiple cranking cycles are measured and recorded- par. 0029].

With respect to Claim 17, Gross discloses using said plurality of subsequent magnitudes of said voltage characteristic to calculate a trend of magnitudes of said voltage characteristic [par. 0027; par. 0017, data is gathered so that future performance of the battery can be assessed].

With respect to Claim 18, Gross discloses predicting a future condition of said battery as a function of said trend [par. 0027; par. 0017, data is gathered so that future performance of the battery can be assessed].

With respect to Claims 19, 26, and 30, Gross discloses selecting said preselected threshold value from a plurality of threshold values [Fig. 3, plural minimum threshold values of G are shown, showing the downward trend the battery voltage will experience over many cycles of cranking. Par. 0029, multiple values of minimum

threshold G are shown, each will be "selected' automatically for the comparison depending on the state of charge of the battery].

With respect to Claims 20, 27, and 31, Gross discloses each of said plurality of threshold values represents a distinct level of said condition of said battery [Fig. 3, the plural minimum threshold values of G shown represent the downward trend the battery voltage will experience over many cycles of cranking; thus each lower level of minimum threshold G represents a successively lower level of charge of the battery].

With respect to Claim 21, Gross discloses a method for monitoring a condition of a battery [par. 0001, Fig. 1, battery 2] which is connectable to an electrical load [Fig. 1, starter 18], comprising the steps of: measuring a voltage characteristic [Fig. 3, this is the battery voltage measured along the curve before minimum voltage G occurs, right before engine cranking begins] of said battery during a measuring event [par. 0027, the measured event is the measurement of the voltage curve shown in Fig. 3, before the engine is cranked; i.e. prior to time period 190] subsequent to a connection event [par. 0028, this is the starter engaging and cranking the engine] when a connection relationship between said battery and said electrical load is changed [prior to being cranked by the starter, the engine and battery voltage were at rest], said voltage characteristic being a minimum voltage magnitude [Fig. 3, minimum voltage threshold G; par. 0028] which is subsequent to said connection event, said electrical load being a starter motor[Fig. 1, starter 18]; comparing said voltage characteristic to a preselected threshold value [Fig. 3, this is the minimum voltage G as it occurs during an engine cranking time window Z, which represents the lowest voltage battery output will fall to

while cranking]; and evaluating said condition of said battery as a function of the relative magnitudes of said voltage characteristic and said threshold value [par. 0028, the comparison occurs between the measured voltage before the point G, and the recovery of the voltage after the point G. if the measured voltage recovers above minimum threshold G then the battery is deemed good].

With respect to Claim 28, Gross discloses a method for monitoring a condition of a battery [par. 0001, Fig. 1, battery 2] which is connectable to an electrical load [Fig. 1, starter 18], comprising the steps of: measuring a voltage characteristic [Fig. 3, this is the battery voltage measured along the curve before minimum voltage G occurs, right before engine cranking begins] of said battery during a measuring event [par. 0027, the measured event is the measurement of the voltage curve shown in Fig. 3, before the engine is cranked; i.e. prior to time period 190] subsequent to a connection event [par. 0028, this is the starter engaging and cranking the engine] when a connection relationship between said battery and said electrical load is changed [prior to being cranked by the starter, the engine and battery voltage were at rest], said voltage characteristic being a minimum voltage magnitude [Fig. 3, minimum voltage threshold G; par. 0028] which is subsequent to said connection event, said electrical load being a starter motor [Fig. 1, starter 18], said starter motor being connected in torque transferring relation with an internal combustion engine [Fig. 1, starter 18 is coupled to the vehicle 6's internal combustion engine], said connection relationship being changed during said connection event from said electrical load being disconnected from said battery to said electrical load being connected to said battery [i.e. the engine is started];

comparing said voltage characteristic to a preselected threshold value [Fig. 3, this is the minimum voltage G as it occurs during an engine cranking time window Z, which represents the lowest voltage battery output will fall to while cranking]; and evaluating said condition of said battery as a function of the relative magnitudes of said voltage characteristic and said threshold value [par. 0028, the comparison occurs between the measured voltage before the point G, and the recovery of the voltage after the point G. if the measured voltage recovers above minimum threshold G then the battery is deemed good].

With respect to Claim 29, Gross discloses said voltage characteristic of said battery is measured across two electrical connections of said electrical load [Fig. 1, monitor 10 is arranged between the battery 2 and the starter 18, and therefore measures the voltage across *both* battery and starter terminals, Par. 0022]

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gross et al. [U.S. 2004/0130296] in view of Gollomp [U.S. 6424157].

With respect to Claim 12, Gross discloses said battery [Fig. 1, battery 2] is connected in electrical communication with a starter motor [Fig.1, starter 18] of an internal combustion engine [par. 0001- the starter is connected to a vehicle with an internal combustion (i.e. cranked) engine]. Gross does not specifically disclose that the internal combustion engine is a marine engine, although it is clearly understood that Gross's invention applies to and will work with any internal combustion engine with a starter and a battery, whether that engine is connected to a land or marine vehicle.

Gollomp discloses a battery [Fig. 7, battery 108] connected in electrical communication with a starter motor of a marine propulsion system [col. 4 lines 58-67- the starter is connected to a vehicle with an internal combustion engine that can be attached to boats].

Gross and Gollomp are analogous means of determining battery condition by using the starter of an internal combustion engine to predict the battery's health during engine cranking. At the time of the invention it would have been obvious to specify that the internal combustion engine included those on boats for the purpose of making the public aware of *all* the possible applications of the invention. Whether that engine is on a boat or on a car is unimportant, particularly since the engine's rotation (or anything else) does not depend on any kind of feedback from a propeller sensor or similar device. Therefore the method of battery state determination would apply to both land vehicles and marine vehicles equally, provided an internal combustion engine with a starter and battery was present. This understanding is also clear in applicant's

specification since only *certain,* and not all, embodiments are said to be on a marine vessel.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard V. Muralidar whose telephone number is 571-272-8933. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl D. Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

6/15/2006
RVM

KARL EASTHOM
SUPERVISORY PATENT EXAMINER